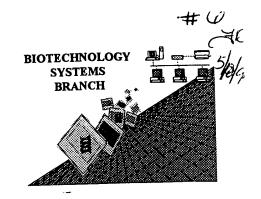
n)a

## RAW SEQUENCE LISTING ERROR REPORT



The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following CRF diskette:

Application Serial Number: 09/056,0/9

Art Unit / Team No.: 16/5

Date Processed by STIC: 9/23/98

THE ATTACHED PRINTOUT EXPLAINS THE ERRORS DETECTED.

PLEASE BE SURE TO FORWARD THIS INFORMATION TO THE APPLICANTS BY EITHER:

- 1) INCLUDING A COPY OF THIS PRINTOUT IN YOUR NEXT COMMUNICATION TO THE APPLICANTS ALONG WITH A NOTICE TO COMPLY or,
- 2) CALLING APPLICANTS AND FAXING THEM A COPY OF THE PRINTOUT WITH A NOTICE TO COMPLY

THIS WILL INSURE THAT THE NEXT SUBMISSION RECEIVED FROM THEM WILL BE ERROR FREE.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CALL:

ARTI SHAH 703-308-4212

BEST AVAILABLE COPY

PAGE:

RAW SEQUENCE LISTING PATENT APPLICATION US/09/056,019 DATE: 09/23/98 TIME: 14:11:31

Input Set: 1056019.RAW

This Raw Listing contains the General Information Section and up to first 5 pages.

Does Not Comply Seep. 5
ected Diskette Needer <110> APPLICANT: Tuomanen, Elaine I. Wizemann, Theresa 2 **Corrected Diskette Needed** Masure, H. R. 3 Johnson, Leslie S. 4 <120> TITLE OF INVENTION: POLYPEPTIDE COMPRISING THE AMINO ACID OF AN N-TERMINAL 5 CHOLINE BINDING PROTEIN A TRUNCATE, VACCINE DERIVED 7 THEREFROM AND USES THEREOF 8 <130> FILE REFERENCE: 1340-1-017 msc <140> CURRENT APPLICATION NUMBER: US/09/056,019 9 10 <141> CURRENT FILING DATE: 1998-04-17 11 <160> NUMBER OF SEQ ID NOS: 39 12 <170> SOFTWARE: PatentIn Ver. 2.0 <210> SEQ ID NO 1 14 <211> LENGTH: 406 15 <212> TYPE: PRT 16 <213> ORGANISM: Streptococcus pneumoniae 17 Glu Asn Glu Gly Ala Thr Gln Val Pro Thr Ser Ser Asn Arg Ala Asn <400> SEQUENCE: 1 18 19 10 Glu Ser Gln Ala Glu Gln Gly Glu Gln Pro Lys Lys Leu Asp Ser Glu 20 21 25 Arg Asp Lys Ala Arg Lys Glu Val Glu Glu Tyr Val Lys Lys Ile Val 22 23 40 Gly Glu Ser Tyr Ala Lys Ser Thr Lys Lys Arg His Thr Ile Thr Val 24 25 s. 60 55 Ala Leu Val Asn Glu Leu Asn Asn Ile Lys Asn Glu Tyr Leu Asn Lys 26 27 70 Ile Val Glu Ser Thr Ser Glu Ser Gln Leu Gln Ile Leu Met Met Glu 28 29 Ser Arg Ser Lys Val Asp Glu Ala Val Ser Lys Phe Glu Lys Asp Ser 30 31 105 Ser Ser Ser Ser Ser Asp Ser Ser Thr Lys Pro Glu Ala Ser Asp 32 33 120 Thr Ala Lys Pro Asn Lys Pro Thr Glu Pro Gly Glu Lys Val Ala Glu 34 35 135 Ala Lys Lys Lys Val Glu Glu Ala Glu Lys Lys Ala Lys Asp Gln Lys 36 37 155 Glu Glu Asp Arg Arg Asn Tyr Pro Thr Ile Thr Tyr Lys Thr Leu Glu 150 38 39 170 Leu Glu Ile Ala Glu Ser Asp Val Glu Val Lys Lys Ala Glu Leu Glu 40 41 185 Leu Val Lys Val Lys Ala Asn Glu Pro Arg Asp Glu Gln Lys Ile Lys 42 43 200 195 44

PAGE: 2 RAW SEQUENCE LISTING DATE: 09/23/98
PATENT APPLICATION US/09/056,019 TIME: 14:11:31

Input Set: I056019.RAW

Gln Ala Glu Ala Glu Val Glu Ser Lys Gln Ala Glu Ala Thr Arg Leu Lys Lys Ile Lys Thr Asp Arg Glu Glu Ala Glu Glu Glu Ala Lys Arg Arg Ala Asp Ala Lys Glu Gln Gly Lys Pro Lys Gly Arg Ala Lys Arg Gly Val Pro Gly Glu Leu Ala Thr Pro Asp Lys Lys Glu Asn Asp Ala Lys Ser Ser Asp Ser Ser Val Gly Glu Glu Thr Leu Pro Ser Pro Ser Leu Lys Pro Glu Lys Lys Val Ala Glu Ala Glu Lys Lys Val Glu Glu Ala Lys Lys Lys Ala Glu Asp Gln Lys Glu Glu Asp Arg Arg Asn Tyr Pro Thr Asn Thr Tyr Lys Thr Leu Glu Leu Glu Ile Ala Glu Ser Asp Val Glu Val Lys Lys Ala Glu Leu Glu Leu Val Lys Glu Glu Ala Lys Glu Pro Arg Asn Glu Glu Lys Val Lys Gln Ala Lys Ala Glu Val Glu Ser Lys Lys Ala Glu Ala Thr Arg Leu Glu Lys Ile Lys Thr Asp Arg Lys Lys Ala Glu Glu Glu Ala Lys Arg Lys Ala Ala Glu Glu Asp Lys Val Lys Glu Lys Pro Ala <210> SEQ ID NO 2 <211> LENGTH: 655 <212> TYPE: PRT <213> ORGANISM: Streptococcus pneumoniae <400> SEQUENCE: 2 Glu Asn Glu Gly Ala Thr Gln Val Pro Thr Ser Ser Asn Arg Ala Asn Glu Ser Gln Ala Glu Gln Gly Glu Gln Pro Lys Lys Leu Asp Ser Glu Arg Asp Lys Ala Arg Lys Glu Val Glu Glu Tyr Val Lys Lys Ile Val Gly Glu Ser Tyr Ala Lys Ser Thr Lys Lys Arg His Thr Ile Thr Val Ala Leu Val Asn Glu Leu Asn Asn Ile Lys Asn Glu Tyr Leu Asn Lys Ile Val Glu Ser Thr Ser Glu Ser Gln Leu Gln Ile Leu Met Met Glu Ser Arg Ser Lys Val Asp Glu Ala Val Ser Lys Phe Glu Lys Asp Ser Ser Ser Ser Ser Ser Ser Asp Ser Ser Thr Lys Pro Glu Ala Ser Asp Thr Ala Lys Pro Asn Lys Pro Thr Glu Pro Gly Glu Lys Val Ala Glu Ala Lys Lys Lys Val Glu Glu Ala Glu Lys Lys Ala Lys Asp Gln Lys PAGE: 3

RAW SEQUENCE LISTING
PATENT APPLICATION US/09/056,019
DATE: 09/23/98
TIME: 14:11:31

Input Set: 1056019.RAW

																Tn	pu	. 5	ec.	_	0300231
														155						_	50
95	145 Glu						150	m.	~ D	ra	Thr	т.	le '	Thr	Ty:	r L	ys '	Thr	Le	u G	lu
96	Glu	Glu	As	A q	rg l	۱rg	ASN	ту	LF	10	1111	1	70		-		=		17	5	
97	Leu					165	<b></b>	١.	17	7-1	Glu:	ı V	al	Lvs	Ly	s A	1a	Glu	Le	u G	lu
98	Leu	Glu	1.	le A	la (	31u	ser	AS	P A	aı	185				-			190			
99	Leu			1	80	_	. 1 -	۸.	.n. 0	,,,	Dro	λ	ra	Asp	Gl	u G	1n	Lys	Il	e L	ys
100	Leu	۷a]	LL	ys V	al :	Lys	ATa	A	311 0	200	110		- 5			2	05				
101			1	95 lu A	_	<b>~</b> 7	1707	α.	111 9	zor	T.VS	≒ G	ln:	Ala	G1	u A	la	Thr	Ar	g L	eu
102	Gln	Ala	a G	lu A	la	GTU	vaı	. ც.	15	,,,	_,.	_			22	0					
103		210	)	le I		m1	3 ~~	. A	ra (	2111	Gli	u A	la	Glu	ı Gl	u G	llu	Ala	Ly	s A	rg
104	Lys	Lу	s I	le I	ys	Tur	230	, A.	.9 `					235	<b>,</b>					2	240
105	225			sp 1		F	231	י ימי	ln (	al v	Lv	s E	ro	Lys	; G1	.y /	۱rg	Ala	L	/s P	arg
106	Arg	Al	a A	sp A	ұта	Lys	GI	1 6	<b></b> ,	<u>-1</u>	-1	2	250	_					25	55	_
107				ro (	<b>~ 7</b>	245	Τ 01	. Δ	la '	Thr	Pr	o 1	Asp	Ly	s Ly	/s (	3lu	Asr	ı As	sp 1	la
108	Gly	٧a	1 P	ro	зту	GIU	ье	u A	Lu		26	5	-	_				270	)		
109				Ser .	260	<b>a</b>	80	r V	al.	ตา v	G1	u (	Glu	Th	r Le	eu 1	Pro	Sei	c P	ro :	Ser
110	Lys	Se	r S	ser .	Asp	Ser	Se		41	280						:	285			_	
111			2	275 Pro	<b>~</b> 1	T	T 17	e 1	al	Ala	Gl	u.	Ala	Gl	u L	ys :	Lys	Va.	1. G	lu	GLu
112	Leu	ı Ly	s i	Pro	GIU	гус	, Lly	2	295						3	00					_
113	_	29	90	Lys	T	A 7 =		11 1	SD	Glr	Ly	7S	Glu	G1	u A	sp	Arg	Ar	g A	sn	Tyr
114	Ala	a LZ	/S	гàг	гуъ	MIC	31	0	<u>-</u> -	_	_			31	5						320
115	305	51		Asn	mb ~	П, 22.1	. T. T	 75	Thr	Leu	1 G.	Lu	Leu	Gl	u I	le	Ala	Gl	u S	er	Asp
116	Pro	T C	nr.	ASN	TIIL	32		-					330	)				_	3	35	T
117		- a	1	Val	Tvc	T. 17	, ≈ A]	a (	Glu	Lev	ı G	lu	Let	ı Va	1 L	ys	Glu	ı Gl	u A	та	гàг
118	Va.	L G.	Lu	νат	340	ъу.					3	45						35	0 .		al.,
119		D		Arg	Acn	Gl	u G	Lu '	Lys	۷a:	1 L	ys	Glr	n Al	La I	.ys	Ala	GT	.u v	/ат	GIU
120	GI	u P	10	255	ASI	. 01	_		-	36	0						365	5			Ara
121	<b>a</b> -	т		333 T 175	Δla	Gl	u A	la	Thr	Ar	g L	eu	Gl	ı L	ys ]	lle	Lys	s Tr	ır A	Asp	Arg
122	se	ΙL	ys 70	цуз	,,,,,				375						3	380		<b>~</b> 1		<b>3</b> ~ ~	Tue
123		T	70	λla	Gli	ı Gl	u G	lu	Ala	Lу	s A	rg	Ly	s A	la <i>i</i>	Ala	GT1	u Gi	Lu A	ASP	Lys 400
124	гу	'S L	ys	ALG			3	90						3	95	- <b>-</b>			1 - '	D ~ 0	1.VS
125	30	,, ,1 T	779	Glu	Lvs	s Pr	o A	la	Glu	G1	n F	ro	Gl	n P	ro A	Ala	Pr	о А.	La .	A 1 5	Lys
126	٧٥	11 1	ıys	0	-1	40	5						41	0	_	_	D	_ A	٦.	413 611	Gln
127	רא	la C	:111	Lvs	Pr	o A]	a P	ro	Ala	Pr	o I	ys	Pr	o G	lu .	Asn	PI	OA.	1a 20	GIU	Gln
128	A.	La	,	-,-	42	0					4	125			_	~7	<b>~</b> 1	A	3 V	ጥኒንዮ	Δla
129	ים	ro 1	.vs	Ala	Gl	u Ly	s F	ro	Ala	A As	sp (	31n	Gl	n A	⊥а	GIU	. G.1	u A	ъÞ	1 7 1	Ala
130			-1-	435	i					44	10			_		<b>~</b> 1 ~	44	יט ט	1 n	Pro	Pro
131 132	Δ	ra i	Ara	Sei	: G1	u G	lu (	lu	Ту	r As	sn i	Arg	j Le	eu 'I	nr	440	. 61	.11 0			Pro
132			450						45	5			_,	-		400	, m.	ır G	:1 v	Tre	Lvs
134	L	vs	Thr	Gli	ı Ly	s P	ro i	Ala	Gl	n P	ro	Ser	r Tr	ır ı	75	пус	,		1		Lys 480
135	4	65						470						r	175 ⊓h≠	λαν	. G	lv S	er	Met	Ala
136	G	ln	Glu	ı Ası	n Gl	у М	et '	rrp	Ту	r P	he	туі	r As	sn :	LIIL	ASI	۔ ح	-, -		495	: Ala
137						4	85				_	_	4	90	T1	η <sup>1</sup> τ71	r T.	eu 1	Asn	Sei	. Asn
138	T	'hr	Gly	y Tr	р Le	eu G	ln	Asn	As	n G	ТА	Se:	r 1	гр	туг	ıy.			510		r Asn
139				-	5(	0.0						50	5 3		A c n	G1:	v S	er S	rrp	Ту	r Tyr
140	c	ly	Ala	а Ме	t A	la T	'hr	Gly	Tr	p L	eu	GT.	n A	3II -	WOII	J1	, 5 5	25	F	-	r Tyr
141		-		51	5					. 5	20	m\.	_ ~	1 17	ጥቍኍ	Ţ.e	u G	ln .	Asn	As	n Gly
142	I	eu	As	n Al	a A	sn (	ly	Sei	: Me	et A	та	.ı.n	ı G	ΤÀ	P	54	0				n Gly
143			53	0					53	35	۰	d٦	,, c	er	Met	Αl	аT	hr	Gly	Tr	p Leu
144	:	ser	Tr	р Ту	r T	yr 1	Leu	Ası	n Al	La A	ısn	ĿĹ	.y 5	CI					-		p Leu

RAW SEQUENCE LISTING
PATENT APPLICATION US/09/056,019

DATE: 09/23/98
TIME: 14:11:31 PAGE: 4

Input Set: 1056019.RAW

													_	rub	ıı	ಎ೬	<b>.</b> .	10300.
												555					,	560
145		545 Gln '			_		550	m	m	T 011	λen	Δla	Asn	Gly	Se	r M	let i	Ala
146																		
147		Thr (			_	565	TI	N a n	cl v	Ser	Trp	Tvr	Tyr	Leu	As	n A	la	Asn
148										~ ~ ~						•		
149		Gly			580	mb	al .,	Trn	Va1	T.VS	Asp	Gly	Asp	Thr	TI	p 1	'yr	Tyr
150									61111					~ ~ -	•			
151		Leu		595	~	a1,,	בוג	Met	Lvs	Αla	Ser	Gln	Trp	Phe	Ly	/s \	/al	Ser
152								<i>~</i> 1 5					020					
153		Asp	610	m	M	Птт	val	Asn	Glv	Ser	Gly	Ala	Leu	Ala	a Va	al A	Asn	Thr
154							C 2 A					033						640
155		625	1207	N cm	al v	Tyr	Glv	Va1	Asn	Ala	Asn	Gly	Glu	Tr	p Va	al 2	Asn	
156		Thr	vaı	АБР	GLY	645	1				650					1	655	
157	<210>	CEO	TD N	ro 3		<b>V</b> 2-5												
158	<210>																	
159	<211>																	
160	<213>	OPGI	NTSN	≀: St	trep	tocoo	cus	pne	umor	iae								
161	<400>														_			3 an
162	(400/	Glu	Asn	Glu	Gly	Ala	Thr	Gln	[Va]	. Pro	Thi	Se	Sei	As	n A	rg	A1a 15	ASII
163 164																		
165		Glu	Ser	Gln	Ala	Glu	Gln	Gly	Gli	ı Glı	n Pro	ь Га	s Ly:	з ге	u A	.sp 30	Ser	GIG
166																		
167		Arq	Asp	Lys	Ala	Arg	Lys	Glu	ı Va	l Gl	ı GL	1 ТУ	r va.	гга	'S L :5	ıys	110	*42
168																		
169		Gly	Glu	Ser	Tyr	Ala	Lys	Ser	Th	r Ly	s Ly	S AI	g ni 6	ν 2 11	11 1			
170																		
171		Ala	Leu	Val	Asn	Glu	Leu	ı Asr	n As	n II	е гу	5 AS 7	n Gi 5	u 1)				80
172																		
173		Ile	val	Glu	Ser	Thr	Ser	C GIV	ı se	r Gr	и пе	u Gi		-			95	Glu
174						85	•			a 1/a	1 9	r T.V	s Ph	e G	lu 1	Ĺys	Asp	Ser
175										10	<b>5</b>							
176					100	)		~ \ \ \ \	n 9e	r Se	r Th	r Ly	s Pr	o G	lu .	Ala	Ser	Asp
177																		
178				115	. n	- Acr	. T 37	e Dr	ር ጥኮ	r Gl	u Pr	o GI	y G1	u L	ys	Val	Ala	Glu
179																		
180			130	) - T.,	~ T 17	e Va	ı (31-	11 Gl	u Al	a Gl	u Ly	s Ly	/s A]	a L	ys	Asp	Glr	1 Lys 160
181																		
182		14:	5 (1)	, λei	n Ar	a Are	a As	n Ty	r Pı	o Th	ar I	e Tl	ar Ty	yr L	ys	Thr	Let	ı Glu 5
183																		
184		ΓO	n Gli	. т1	e Al	a Gl	u Se	r As	p Va	al G	Lu Va	al L	ys L	ys A	la	Glu	Let	u Glu
185																		
186		Τ.Δ	u Va	l Lv	s Va	l Ly	s Al	a As	n G	lu P	ro A	rg A	sp G	lu G	ln	Lys	S II	e Lys
187																		
188		G1	n Al	a Gl	u Al	a Gl	u Va	1 G]	lu s	er L	ys G	ln A	la G	lu F	lla	Thi	CAT	g Leu
189 190																		
190		Lv	s Lv	s Il	e Ly	s Th	r As	sp A	rg G	lu G	lu A	la G	lu G	Tu (	i⊥u	AT	з гу	s Arg 240
191							2.7	אכ										
193		Ar	g Al	a As	ap Al	la Ly	s Gl	Lu G	ln G	ly L	ys P	ro L	ys G	тА	ar G	HT.	а цу 25	s Arg
194			_		-	24	5				2	50					23	
1/4																		

DATE: 09/23/98 RAW SEQUENCE LISTING PAGE:

TIME: 14:11:31 PATENT APPLICATION US/09/056,019

Input Set: 1056019.RAW

```
Gly Val Pro Gly Glu Leu Ala Thr Pro Asp Lys Lys Glu Asn Asp Ala
    195
                            260
                Lys Ser Ser Asp Ser Ser Val Gly Glu Glu Thr Leu
    196
    197
                                             280
                        275
    198
          <210> SEQ ID NO 4
    199
          <211> LENGTH: 106
    200
          <212> TYPE: PRT
    201
          <213> ORGANISM: Streptococcus pneumoniae
    202
          <400> SEQUENCE: 4
                Lys Pro Glu Lys Lys Val Ala Glu Ala Glu Lys Lys Val Glu Glu Ala
    203
    204
                Lys Lys Lys Ala Glu Asp Gln Lys Glu Glu Asp Arg Arg Asn Tyr Pro
    205
    206
                                                   25
                 Thr Asn Thr Tyr Lys Thr Leu Glu Leu Glu Ile Ala Glu Ser Asp Val
     207
     208
                                               40
                 Glu Val Lys Lys Ala Glu Leu Glu Leu Val Lys Glu Glu Ala Lys Glu
     209
     210
                                           55
                 Pro Arg Asn Glu Glu Lys Val Lys Gln Ala Lys Ala Glu Val Glu Ser
     211
     212
                 Lys Lys Ala Glu Ala Thr Arg Leu Glu Lys Ile Lys Thr Asp Arg Lys
     213
     214
                                                       90
     215
                 Lys Ala Glu Glu Ala Lys Arg Lys Ala
     216
                              100
     217
           <210> SEQ ID NO 5
     218
           <211> LENGTH: 109
     219
           <212> TYPE: PRT
     220
           <213> ORGANISM: Streptococcus pneumoniae
     221
                  Thr Glu Pro Gly Glu Lys Val Ala Glu Ala Lys Lys Lys Val Glu Glu
            <400> SEQUENCE: 5
     222
      223
                  Ala Glu Lys Lys Ala Lys Asp Gln Lys Glu Glu Asp Arg Arg Asn Tyr
      224
      225
                                                    25
                  Pro Thr Ile Thr Tyr Lys Thr Leu Glu Leu Glu Ile Ala Glu Ser Asp
      226
      227
                                                40
                  Val Glu Val Lys Lys Ala Glu Leu Glu Leu Val Lys Val Lys Ala Asn
      228
      229
                                            55
                  Glu Pro Arg Asp Glu Gln Lys Ile Lys Gln Ala Glu Ala Glu Val Glu
      230
      231
                                                            75
                  Ser Lys Gln Ala Glu Ala Thr Arg Leu Lys Lys Ile Lys Thr Asp Arg
      232
      233
                                    85
                  Glu Glu Ala Glu Glu Ala Lys Arg Arg Ala Asp Ala
      234
      235
                                                    105
                               100
      236
             <210> SEQ ID NO 6
      237
             <211> LENGTH: 4
      238
                   SEQUENCE: 6
Lys Xaa Xaa Glu Sel iten 10 on Even Junnay Sheet
             <212> TYPE: PRT
      239
             <213> ORGANISM: Streptococcus pneumoniae
       240
             <400> SEQUENCE: 6
       241
       242
W-->
                     1
       243
             <210> SEQ ID NO 7
       244
```

Use In's and/or Xaa's have been detected in the Sequence Listing. Please review any subsequent sequences in the Sequence Listing t ensure that a c rresponding explanation is presented in the <220> - <223> section of each sequence presenting at least one n or Xaar

PAGE: 6

## VERIFICATION SUMMARY PATENT APPLICATION US/09/056,019 DATE: 09/23/98 TIME: 14:11:31

Input Set: 1056019.RAW

Line ? Error/Warning	Original Text
242 W "N" or "Ada" used: reducte required	Lys Xaa Xaa Glu Xaa Glu Asn Glu Gly Glu Val Xaa Gly Glu Leu Ala Thr Pro Asp L